## REMARKS

By this Preliminary Amendment, claims 1 and 42-60 are pending. Claims 2-41 were canceled at item 14 of for PAT-108CN prior to fee calculation. Consideration and allowance in view of the foregoing Amendment and the following remarks are respectfully requested.

New claims 42-60 have been added to more fully claim the present invention and are supported by the original specification and figures.

Applicants have submitted a Drawing Change Authorization Request to correct the labeling of the figures so they read Figures 1a - 1b, 2a - 2b, 3a - 3b, 4a - 4b, 5a - 5b, 6a - 6b, 28a - 28d, 29a - 29d, 30a - 30d, 31a - 31e and 32a - 32e. Each figure is labeled separately and the description of the drawings in the specification is amended to agree with those figures. The changes to the above figures have been carried forward from the parent application.

Applicants have replaced the present Abstract with the new Abstract submitted herewith on a separate sheet. Applicants draw the Examiner's attention to the amendments to the specification that the Applicants carried forward from the parent application.

In view of the above amendments and remarks, Applicants respectfully submit that all the claims are patentable and that the entire application is in condition for allowance.

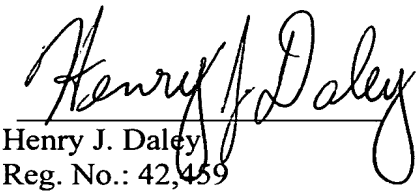
Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, he is invited to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

Prompt and favorable examination is earnestly solicited.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

**IN THE DRAWINGS:**

Please see the attached Drawing Change Authorization Request.

**IN THE SPECIFICATION:**

The specification is changed as follows:

Pages 8 and 9, delete the whole paragraph starting in line 3 and replace it with the following new paragraph.

In accordance with the present invention, this problem can be averted by allocating a great part of the burden of the zooming action to the third lens group, whereby a satisfactory zoom ratio and compactness are achieved with no considerable change in the power ratio between the first and second lens groups. To allow the third lens group to have a great zooming action, it is then required that the third lens group have relatively large power, as defined by condition (1). When the lower limit of 0.5 in condition (1) is not reached or when the power of the third lens group becomes weak with respect to the power of the second lens group, the amount of movement of the third lens group during zooming becomes too large. With this, the amount of movement of the second lens group to keep the image plane at a constant position becomes large, failing to achieve compactness. When the upper limit of 1.2 is exceeded or when the power of the third lens group with respect to the second lens group becomes too strong, the amount of astigmatism produced at the third lens group becomes too large, and the distance between the third lens group

and an object point therefor becomes too short. This in turn makes it impossible to provide a sufficient space between the second and third lens groups. For the insertion of an image pickup element package such as a CCD or CMOS, an IR cut filter, a low-pass filter or the like in the optical system, it is required that a back focus $f_B$ be at least 2.5 min. At a back [foucs] focus $f_B$ of greater than 4.5 mm, on the other hand, compactness is unachievable. For this reason, it is required to satisfy the following condition (10):

$$2.5 \text{ mm} < f_B(\text{min}) < 4.8 \text{ mm} \quad \ldots (10)$$

Here $f_B$ (min) is a value obtained when the length, as calculated on an air basis, from the final surface of the powered lens in the zoom lens system to the image plane is minimized in the overall zooming zone. Intended by the term "powered lens" used herein is a lens whose refracting power is not zero.

Page 28, delete the whole paragraph starting in line 16 and replace it with the following new paragraph.

[Figure 1 is a] Figures 1a and 1b are sectional schematic views illustrative of Example 1 of the zoom lens according to the invention.

Page 28, delete the whole paragraph starting in line 18 and replace it with the following new paragraph.

[Figure 2 is a] Figures 2a and 2b are sectional schematic views illustrative of Example 2 of the zoom lens according to the invention.

Page 28, delete the whole paragraph starting in line 20 and replace it with the following new paragraph.

[Figure 3 is a] Figures 3a and 3b are sectional schematic views illustrative of Example 3 of the zoom lens according to the invention.

Page 28, delete the whole paragraph starting in line 22 and replace it with the following new paragraph.

[Figure 4 is a] Figures 4a and 4b are sectional schematic views illustrative of Example 4 of the zoom lens according to the invention.

Page 28, delete the whole paragraph starting in line 24 and replace it with the following new paragraph.

[Figure 5 is a] Figures 5a and 5b are sectional schematic views illustrative of Example 5 of the zoom lens according to the invention.

Page 28, delete the whole paragraph starting in line 26 and replace it with the following new paragraph.

[Figure 6 is a] Figures 6a and 6b are sectional views illustrative of Example 6 of the zoom lens according to the invention.

Page 31, delete the whole paragraph starting in line 9 and replace it with the following new paragraph.

[Figure 28 is] Figures 28a -28d are [an] aberration [diagram] diagrams of Example 1 at a wide-angle end thereof.

Page 31, delete the whole paragraph starting in line 11 and replace it with the following new paragraph.

[Figures 29 is] Figures 29a-29d are [an] aberration [diagram] diagrams of Example 1 at an intermediate focal length.

Page 31, delete the whole paragraph starting in line 13 and replace it with the following new paragraph.

[Figure 30 is] Figures 30a-30d are [an] aberration [diagram] diagrams of Example 1 at a telephoto end thereof.

Page 31, delete the whole paragraph starting in line 15 and replace it with the following new paragraph.

[Figure 31 is] Figures 31a-31e are [an] aberration [diagram] diagrams of Example 17 at an wide-angle end thereof.

Page 31, delete the whole paragraph starting in line 17 and replace it with the following new paragraph.

[Figure 32 is] Figures 32a-32e are [an] aberration [diagram] diagrams of Example 17 at an telephoto end thereof.

Page 32, delete the whole paragraph starting in line 18 and replace it with the following new paragraph.

[Fig. 1 is a] Figs. 1a and 1b are schematic views illustrative of one sectional arrangement of Example 1. Example 1 is made up of, in order from an object side thereof, a first positive lens group G1, a second negative lens group G2, a stop S, a third positive lens group G3, and a fourth positive lens group G4. The first lens group G1 remains fixed during the zooming, the second lens group G2 moves from the object side to an image plane side of the system during zooming from a wide-angle end thereof to a telephoto end thereof, the third lens group G3 moves from the image plane side to the object side during zooming from the wide-angle end to the telephoto end, and the fourth lens group G4 moves to keep an image plane at a constant position during zooming.

Page 33, delete the whole paragraph starting in line 18 and replace it with the following new paragraph.

[Fig. 2 is a] Figs. 2a and 2b are schematic views illustrative of one lens arrangement of Example 2. The overall power profile and zooming movements in Example 2 are the same as in Example 1.

Page 34, delete the whole paragraph starting in line 12 and replace it with the following new paragraph.

[Fig. 3 is a] Figs. 3a and 3b are schematic views illustrative of one lens arrangement of Example 3. The overall power profile and zooming movements in Example 3 are the same as in Example 1.

Page 35, delete the whole paragraph starting in line 3 and replace it with the following new paragraph.

[Fig. 4 is a] Figs. 4a and 4b are schematic views illustrative of one lens arrangement of Example 4. The overall power profile and zooming movements in Example 4 are the same as in Example 1.

Page 35, delete the whole paragraph starting in line 22 and replace it with the following new paragraph.

[Fig. 5 is a] Figs. 5a and 5b are schematic views illustrative of one lens arrangement of Example 5. The overall power profile and zooming movements in Example 5 are the same as in Example 1.

Page 36, delete the whole paragraph starting in line 14 and replace it with the following new paragraph.

[Fig. 6 is a] Figs. 6a and 6b are schematic views illustrative of one lens arrangement of Example 6. The overall power profile and zooming movements in Example 6 are the same as in Example 1.

Page 105, delete the whole paragraph starting in line 1 and replace it with the following new paragraph.

Aberration curve diagrams for Example 1 are shown in Figs. [18 to 20] 28a-28d, 29a-29d and 30a-30d wherein [Fig. 18 shows] Figs. 28a-28d show aberrations at the wide-angle end thereof, [Fig. 19] Figs. 29a-29d show aberrations at an intermediate focal length thereof, and [Fig. 20] Figs. 30a-30d show aberrations at the

telephoto end thereof. Aberration diagrams for Example 17 of the zoom lens system according to the invention when focused on an object at infinity are attached hereto as [Fig. 31] Figs. 31a-31e (at the wide-angle end) and [Fig. 32] Figs. 32a-32e (at the telephoto end) wherein [(a) represents] Figs. 31a and 32a show spherical aberration, [(b)] Figs. 31b and 32b show astigmatism, [(c)] Figs. 31c and 32c show distortion, [(d)] Figs. 31d and 32d show chromatic aberration of magnification, and [(e)] Figs. 31e and 32e show coma, with $\omega$ standing for a half field angle.

**IN THE CLAIMS**:

Please amend claim 1 as follows:

1. (Amended) A zoom lens system comprising in order from an object side of said zoom lens system:

a first lens group having positive refracting power[,] ;

a second lens group that has negative refracting power and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system[,] ;

a third lens group having positive refracting power[, and] ;

a fourth lens group that has positive refracting power and is movable during zooming, wherein:

said first lens group comprises two lenses, a negative lens and a positive lens, or one positive lens alone,

said third lens group comprises three lenses, a positive lens, a positive lens and a negative lens, or two lenses, a positive lens and a negative lens, and

said third lens group has at least one aspherical surface therein[,]

[provided that said zoom lens system satisfies the following condition (10):

$$2.5 \text{ mm} < f_{B(min)} < 4.8 \text{ mm} \quad \ldots(10)$$

where $f_{B(min)}$ is a value obtained when a length, as calculated on an air basis, from a final surface of a powered lens in said zoom lens system to an image plane is minimized in an overall zooming zone] ; and

a negative lens located nearest to an image side of the second lens group that satisfies at least the following condition (7):

$$\nu_{21} < 40 \quad \ldots (7),$$

wherein $\nu_{21}$ is an Abbe's number of said negative lens.

Claims 42-60 are newly presented.

**IN THE ABSTRACT OF THE DISCLOSURE**:

The abstract is changed as follows:

[The invention provides] A compact yet low-cost zoom lens system [which is] being particularly suited for use with small portable information terminal equipment is provided. The zoom lens system [comprises] includes, in order from an object side thereof, a first, third and fourth lens groups G1, G3 and G4 that [has] have positive refracting [power] powers [and remains fixed during zooming,] and a second lens group G2 that has negative refracting power. [moves from the object side to an image plane side of the system during zooming from a wideangle end to a telephoto end of the system, a third lens group G3 that has positive refracting power and moves from the image plane side to the object side during zooming from the

wide-angle end to the telephoto end and a fourth lens group G4 that has positive refracting power and] Lens group G1 remains fixed during zooming and lens groups G2 and G3 move during zooming and lens group G4 is movable during zooming. In one embodiment, the [The] zoom lens system includes a negative lens located nearest to the imaging side of the second lens group G2 that satisfies a condition $\nu_{21} < 40$, wherein $\nu_{21}$ is an Abbe's number of said negative lens. [should satisfy condition (1) regarding the power of the third lens group G3, condition (2) regarding the amount of movement of the third lens group G3 during zooming or condition (3) regarding the composite power of the third and fourth lens groups G3 and G4, and condition (10) regarding the actual value of the back focus].